

REMARKS/DISCUSSION OF ISSUES

Claims 1-17 are pending in the application. Claims 1-3 and 5-12 are rejected. Claim 4 is objected to. Claim 12 is allowed. Claims 1 and 2 are amended to correct obvious typographic errors. Claim 1 is amended to add missing punctuation and in claim 2, a dependent range was erroneously listed as not coextensive with the independent range.

Claims 1, 2, 3, 5, 6, 7, 8, 9 and 11 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kosokabe (U.S. patent publication no. 2002/0001881). This rejection is respectfully traversed. It is respectfully submitted that the claims are allowable over Kosokabe for at least the following reasons.

Kosokabe teaches a glass for encapsulating a semiconductor, such as a light emitting diode. It must be pointed out that the aim of Kosokabe while eliminating lead from the glass composition, is to have a glass material that "can be sealed stably with Dumet." (See, paragraph 6, line 5.) As such, the ranges provided generally are very wide (e.g., 0-15%, Al_2O_3 , 0-45% MgO, CaO, SrO, BaO, and ZnO, etc.) and provide very little guidance to the skilled artisan. Each of the disclosed ranges provides for as much as 0% to 100% for each of the cited individual elements and as such requires undue experimentation to arrive at any workable composition. The

only real guidance provided is in the several exemplary compositions in Kosokabe which is telling in that due to the differences in the target applications, a glass for encapsulating a semiconductor in Kosokabe and an electric lamp for the present application, the exemplary compositions in Kosokabe are quite different than the claimed subject matter of the present patent application.

It is respectfully submitted that while Kosokabe shows some of the materials specified by the current claims, such as Al_2O_3 , Li_2O , Na_2O and K_2O , Kosokabe does not disclose the portions by weight recited in the claims as presented.

For example, claim 1 recites "<0.1 weight% Al_2O_3 ..." The Office Action cites paragraph 14 for showing this feature yet reliance on this section is misplaced. While Kosokabe discloses several ranges that are from zero to some other value, in fact, Kosokabe teaches that " Al_2O_3 is a component for improving the chemical durability of glass." (See, paragraph 37, lines 1-2.) Kosokabe actually teaches a more preferable range is from 0.5 to 10% (see, paragraph 37, line 3). In fact, in the numerous examples provided in Kosokabe in Tables 1-6, in fact Al_2O_3 is provided with a portion by weight of between 2.5 and 9. It is the Applicants that first recognized that "[t]he substantial absence of Al_2O_3 has the following advantages. The liquidus temperature (T_{liq}) is reduced by at least 100°C due to

favorable crystallization properties. The absence of Al_2O_3 in the glass composition according to the invention, as compared with that of the known glass composition, does not have a detrimental influence on the chemical resistance nor on the resistance to weathering of the glass. In addition, the glass according to the invention exhibits a low crystallization tendency as well as a viscosity and softening temperature (T_{soft}) enabling a good processing of the glass." (See, current application, page 3, lines 19-25.)

Accordingly, it is respectfully submitted that Kosokabe in fact teaches away from <0.1 weight% Al_2O_3 .

Regarding the combination and proportions by weight of Li_2O , Na_2O and K_2O , the office action although recognizing that "Kosokabe ('881) does not disclose the specific amounts of: 0.5-4 weight% Li_2O , 0.5-3 weight% Na_2O , 10-15 weight% K_2O , draws a conclusion that "the optimum amount of each substance could be ascertained by one of ordinary skill in the art without undue experimentation." (See, Office Action, page 3, lines 1-3 and 7-9.) This position is respectfully refuted. While some guidance is provided as to effects of different compositions of these elements (see paragraph 41 and the examples provided in paragraphs 53-58), Kosokabe for example teaches Li_2O not lower than 3% is particularly desirable. In fact the majority of the examples provided have Li_2O in

proportions of 4.2% and greater. Na_2O is predominantly disclosed having a % weight of 7.3 in the vast majority of the examples provided for by Kosokabe and K_2O is shown in a range of 5-8%. Accordingly, it is respectfully submitted that the guidance provided by Kosokabe to the skilled artisan is counter to what is recited in the current claims, regarding the composition of Li_2O , Na_2O and K_2O .

It is the Applicants that recognized (emphasis added) "[i]f the alkali-metal-oxide content is below the indicated limits, the glass will have a too low α -value (coefficient of linear expansion), and T_{soft} (softening point) will be too high. Above the indicated limits, the α -value will be too high. Li_2O causes a greater reduction of T_{soft} than K_2O , which is desirable for obtaining a wide so-called "Working Range" ($= T_{\text{work}} - T_{\text{soft}}$). Too high an Li_2O content leads to an excessive increase of T_{liq} ." (See, page 3, line 32 through page 4, line 3.) The above provides guidance not shown in Kosokabe and in fact is counter to that that shown in Kosokabe. Accordingly, it is respectfully submitted that Kosokabe does not disclose or suggest the composition of Li_2O , Na_2O and K_2O recited in the claims.

Regarding the compositions of SrO and BaO , again Kosokabe is insufficient in providing suitable guidance to be said to render the claimed subject matter obvious. Kosokabe

specifically teaches a range of from 0-45% (!) of these elements together with 3 other elements (see paragraph 15). In fact in the majority of the examples provided in paragraphs 53-58, either one or the other of SrO or BaO are excluded completely. The claims as provided may not be read so broadly. It is the Applicants that recognized that "BaO has the favorable property that it causes the electrical resistance of the glass to increase and T_{soft} to decrease. Below 7 wt.%, the melting temperature (T_{melt}), T_{soft} , and the working temperature (T_{work}) increase too much. Above 10 wt.%, the liquidus temperature (T_{liq}) and hence the crystallization tendency increase too much." (See, page 4, lines 5-8.)

It is respectfully submitted that the electric lamp of Claim 1 is not made obvious by the teachings of Kosokabe. For example, Kosokabe does not disclose or suggest, an electric lamp that amongst other patentable elements, comprises (illustrative emphasis provided) "the composition of the glass component being substantially free of PbO and comprising, expressed as a percentage by weight, the following constituents: 55-70 weight% SiO₂, <0.1 weight% Al₂O₃, 0.5-4 weight% Li₂O, 0.5-3 weight% Na₂O, 10-15 weight% K₂O, 0-3 weight% MgO, 0-4 weight% CaO, 0.5-5 weight% SrO, 7-10 weight% BaO" as required by Claim 1. Filmer is introduced for allegedly

showing elements of a dependent claim (discussed below) and as such, does nothing to cure the deficiencies in Kosokabe.

Based on the foregoing, the Applicants respectfully submit that independent Claim 1 is patentable over Kosokabe and notice to this effect is earnestly solicited. Claims 2-11 depend from Claim 1 and accordingly are allowable for at least this reason as well as for the separately patentable elements contained in each of the claims.

For each of dependent claims 2-6, the Office Action has taken a position that although Kosokabe does not disclose the ranges specified in the claims, "the optimum amount of each substance could be ascertained by one of ordinary skill in the art without undue experimentation." This position is respectfully refuted. In fact, as discussed above, the guidance provided by Kosokabe is in most cases in conflict with what is recited in the claims.

Claim 10 is rejected under 35 USC 103(a) as being unpatentable over Kosokabe in view of Filmer (U.S. 5,925,582). It is respectfully submitted that Filmer was discussed at length in the previous amendment and is cited in the current Office Action for allegedly showing that which the prior Office Action alleged was shown yet the remarks previously provided are not discussed or acknowledged in the current Office Action. Accordingly, should this rejection of claim 10 be maintained,

it is respectfully requested that the remarks previously provided by the Applicants, and substantially reproduced herein, be addressed and that such a subsequent Office Action be provided in non-final form to provide the Applicants the appropriate opportunity to respond to any new remarks provided. Clearly the previously provided remarks should have been addressed in the current Office Action since Filmer is provided for allegedly showing the same as previously alleged.

In pertinent part, Filmer discloses a glass composition suitable for use in a fluorescent lamp envelope, which glass has a low sodium content (<0.1 wt.% Na_2O), and is free of the toxic and/or corrosive components PbO , F , As_2O_3 and Sb_2O_3 .

In contrast, Applicants' glass composition contains from 0.5-3 wt.% Na_2O . In addition, Filmer's composition contains from 2-6 wt.% Al_2O_3 , while Applicants' composition contains less than 0.1 wt.% of this component. Moreover, Applicants' ranges of SrO and CeO_2 are different from those disclosed by Filmer.

Accordingly, Filmer's glass composition is significantly different from Applicants', and it would not be obvious to use Applicants' glass composition in an electric lamp in view of the teachings of Filmer.

Furthermore, Filmer's glass composition was developed for different purposes, and is therefore different from one another. For example, Filmer calls for less than 0.1 wt.% of

Na₂O.

For all of the above reasons, Applicants' claim 10 is patentable over the combination of Kosokabe in view of Filmer, and the rejection is in error and should be withdrawn.

Accordingly, separate consideration of each of the dependent claims is respectfully requested.

In addition, Applicants deny any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Applicants reserve the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

Applicants have made a diligent and sincere effort to place this application in condition for immediate allowance and notice to this effect is earnestly solicited.

Respectfully submitted,

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